CLAIMS

1. A digital camera comprising:

a processor having a memory;

a substrate having at least one pixel disposed thereon for absorbing light from an object, the at least one pixel being electrically coupled to the processor for storing a digital image of the object in the memory of the processor; and

an electromechanical shutter mechanism moveably associated with the at least one pixel and having a first position and a second position that are selected according to commands from the processor of the digital camera, the first position exposing the at least one pixel to the light from the object and the second position preventing the exposure of the at least one pixel to the light.

2. The digital camera of claim 1 wherein the substrate has a plurality of pixels disposed thereon and the electromechanical shutter mechanism includes a plurality of individual shutters that are each associated with a corresponding subset of the plurality of pixels, the plurality of individual shutters of the electromechanical shutter mechanism being configured to move from the first position to the second position simultaneously.

3. The digital camera of claim 2 wherein the electromechanical shutter mechanism is configured to be moved between the first position and the second position within the plane of the substrate.

4. The digital camera of claim 3 wherein the electromechanical shutter mechanism comprises a planar surface having a plurality of openings that each correspond to a position of one of the plurality of pixels, wherein the electromechanical shutter mechanism exposes the plurality of pixels through the plurality of openings when the electromechanical shutter mechanism is in the first position.

5. The digital camera of claim 2 wherein the corresponding subset of the plurality of pixels comprises a row of pixels.

6. The digital camera of claim 5 wherein the individual shutters of the electromechanical shutter mechanism each comprise an elongate shutter that extends along the row of pixels, the elongate shutter having hinges coupled at least at each end such that the elongate shutter moves between the first position and the second position with respect to the row of pixels, the first position being perpendicular to the substrate and the second position being slightly off perpendicular so that the individual shutter creates a shadow on the row of pixels.

7. An image capturing device comprising:

an adjustable aperture that allows light to pass through when opened and that prevents light from passing through when closed;

a substrate having a plurality of pixels disposed thereon for capturing the light that passes through the adjustable aperture;

a shutter mechanism that is used to control the amount of the light that the plurality of pixels receive when the adjustable aperture is opened, the shutter mechanism simultaneously adjusting the amount of light that each of the plurality of pixels receives; and

a processing device for storing the data that is captured in each of the plurality of pixels such that the image capturing device is able to generate an image that is created by the light that passes through the adjustable aperture.

8. The image capturing device of claim 7 wherein the shutter mechanism comprises a first position and a second position, the first position being an open position that exposes the plurality of pixels to the light that passes through the adjustable aperture and the second position being a closed position that prevents exposure of the plurality of pixels to the light that passes through the adjustable aperture.

9. The image capturing device of claim 8 wherein the shutter mechanism comprises a flat surface positioned in the plane of the substrate, the flat surface having a plurality of openings that correspond with the plurality of pixels on the substrate and being moveably adjustable in the plane of the substrate such that the openings of the flat surface either expose or prevent exposure of the plurality of pixels on the substrate.

10. The image capturing device of claim 8 wherein the shutter mechanism comprises a plurality of elongate surfaces that, when in the first position, extend perpendicularly upward from the substrate, each of the plurality of elongate surfaces having at least two hinges between the substrate and a bottom edge of the elongate surface such that the plurality of elongate surfaces may move between the first position and the second position when the processing device so commands the at least two hinges.

11. A method for an image capturing device to control pixel exposure of a plurality of pixels on a substrate, the image capturing device including a shutter mechanism that provides a first shutter setting and a second shutter setting, the method comprising:

arranging the plurality of pixels to operate with the shutter mechanism such that the first shutter setting provides the plurality of pixels with exposure to a light source and the second shutter setting prevents the exposure of the plurality of pixels to the light source;

exposing the plurality of pixels to the light source for a predetermined period of time;

measuring a saturation point for each of the plurality of pixels;

capturing, with each of the plurality of pixels, a data representation of a portion of the light source;

recognizing that the saturation point for at least one of the plurality of pixels has been reached; and

positioning the shutter mechanism in the second shutter setting, thereby discontinuing the exposure of the plurality of pixels to the light source.

12. The method of claim 11 wherein said positioning the shutter mechanism in the second shutter setting comprises shifting, in the plane of the substrate, a flat surface from a first position to a second position, the flat surface having a plurality of openings that expose the plurality of pixels when the flat surface is in the first position and that prevents exposure of the plurality of pixels when the flat surface is in the second position.

13. The method of claim 11 wherein said positioning the shutter mechanism in the second shutter setting comprises angling at least one elongate shutter from a first position that

is perpendicular to the substrate to a second position that shadows the plurality of pixels from the light source.

14. The method of claim 13 wherein the at least one elongate shutter comprises a plurality of elongate shutters that each correspond to a row of pixels from the plurality of pixels, the plurality of elongate shutters shadowing the respective corresponding row of pixels when the shutter mechanism is in the second shutter setting such that the plurality of pixels is shadowed.

15. The method of claim 13 wherein each of the at least one elongate shutter is coupled to the substrate by at least two hinges, respectively, the at least two hinges of the at least one elongate shutter being moved at an angle such that the at least one elongate shutter simultaneously shadows the plurality of pixels when the at least one elongate shutter is moved from the first position to the second position.

16. The method of claim 15 wherein the at least one elongate shutter comprises a plurality of elongate shutters, each of the plurality of elongate shutters corresponding to a row of pixels from among the plurality of pixels, the plurality of elongate shutters each having at least two hinges coupled between a bottom edge of the elongate shutter and the substrate.